

Indoor Positioning Standards Update

December 6, 2014

- FCC is currently engaged in evaluating rules for indoor location
- NPRM released in Feb 2014, comment and reply cycle completed in July 2014
- Proposed rules call for high precision 2D positioning and vertical
 - 50m – 67% of time in 2 years; 50m- 80% of time in 5 years (2D Positioning)
 - 3m – 67% of time in 3 years; 3m – 80% of time in 5 years (Vertical)
- Several technologies have demonstrated the ability to meet these capabilities; some were tested in CSRIC III in the Indoor Test Bed in San Francisco
- Typically most new technologies go through standardization as part of the commercialization process
 - AGPS in 2004
- Standardization is designed to ensure the following:
 - Scalability of solution
 - Competitiveness in market place

- Standards bodies typically involved are:
 - 3GPP: International SDO recognized by ITU; typically involved with RF, Physical layers and Control Plane protocols
 - ATIS: US affiliate for 3GPP
 - OMA: Responsible for defining specifications related to User Plane
 - CTIA: Defines some standards related to RF and test equipment standards
- In June 2014 FCC urged 3GPP and OMA to prioritize work related to indoor location
- On the basis of the FCC letter 3GPP approved the Indoor Positioning Study Item (SI)
 - Broad Industry support – 28 companies support the proposal (Department of Commerce/FirstNet, Harris, Motorola Solutions, AT&T, Verizon, T-Mobile, Qualcomm, Intel, Broadcom, TCS, Ericsson, NSN etc); Rapporteur of Study Item: NextNav (SI Attached)
 - OMA responded to FCC indicating it would prioritize work in a similar fashion as contributions became available

- Study Item will evaluate technologies and specification impacts related to Indoor Positioning, such as:
 - Enhancements to OTDOA
 - Enhancements to RFPM
 - Terrestrial Beacon Systems
- This is to be part of Release 13 of 3GPP
- Broadly classified as Radio Access Technology (RAT) Dependent and RAT Independent
 - Example of RAT Dependent Technologies: OTDOA, AFLT, UTDOA
 - Example of RAT Independent Technologies: GPS, Glonass, TBS
- OTDOA: Orthogonal Time Difference of Arrival; positioning method based on LTE RAT. (TS 36.355, 36.211, 36.212, 36.213, 36.133, 36.214, 37.571-1)
- RFPM: RF Pattern Matching; positioning based on LTE RAT (TR 36.809)
- TBS: Terrestrial Beacon System; RAT independent positioning (ICD Attached)
- The SI on Indoor Positioning in 3GPP has commenced in Oct 2014; anticipated approved spec by 2015

- Carriers, Public Safety and Technology vendors are all committed to the process of standardization
- Indoor Location Technologies are well on their way to standardization and will be available as part of Rel 13 of 3GPP and OMA SUPL 2.x
- In the “Indoor Location Test Bed Report” (CSRIC III), Public Safety stated in its foreword

“Public Safety expects that the standardization, commercial availability and deployment of such technologies are priorities for all stakeholders”

Questions ?